

DETERMINANTS OF ENTREPRENEURIAL INTENTIONS¹

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A B S T R A C T

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In this paper an economic-psychological model of factors that influence individuals' intentions to go into business for themselves is developed and tested. According to this model the primary determinant of entrepreneurial intention is a person's conviction that starting and running one's own firm is a suitable alternative for him/her. This conviction is in its turn based on certain general attitudes and domain attitudes. The former refer to more general psychological dispositions whereas the latter specifically concern entrepreneurship and owner-managed firms.

Attitudes are believed to act as mediators for influences of personal background factors. Apart from this "main chain" of causal influences, the individual's current situation (i.e., employment status) is expected to have an impact on both conviction and intentions. The importance of this type of situational influence has been highlighted by previous research.

The model is tested on a large sample of 35-40 years old Swedish subjects. A mail questionnaire with multiple indicators of the concepts in the model was distributed to 300 subjects each in 6 different regions. A response rate of over 70 percent was obtained. The use of six separate samples allows for checking the stability of the results.

The results largely support the relationships suggested by the model. Comparatively high explanatory power (35 and over 50 percent, respectively) was obtained for conviction and intentions. The supposed effects of background factors and current situation were also confirmed. However, the analyses suggest that part of the influence of background factors is not mediated by the used psychological constructs.

It is concluded that the model neatly summarizes and integrates much of what we know from previous research about factors that influence individuals' entrepreneurial inclinations, and also adds some new insights.

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DETERMINANTS OF ENTREPRENEURIAL INTENTIONS

1. Why study entrepreneurial intentions?

From the 1970's onwards many western countries have shared the same experience: large established firms can no longer create a net increase in employment. This has resulted in permanently high levels of unemployment and/or in an increasing relative importance of small and new firms as creators of new jobs (cf. Aiginger & Tichy, 1991; Davidsson, 1995a; 1995b; Davidsson, Lindmark & Olofsson, 1995, and their references). This is the background to the current great political interest in the small firm sector, and the widespread hopes that small and new firms will solve problems of unemployment and economic development.

This turn of events has been mirrored by a rising academic interest in entrepreneurship, understood as the creation of new independent firms². In the early empirical research this interest was very much focused on the psychological characteristics of business founders, although the research was not closely linked to contemporary developments in psychology. A trait approach was often employed, and almost endless lists of entrepreneurial traits were suggested (cf. Hornaday, 1982). It eventually turned out that this line of research was unable to give more than a small fraction of the answer to the question "What makes people found new firms?" (cf. Davidsson, 1992; Gartner, 1989; Low & MacMillan, 1988). It has been convincingly argued that personal background characteristics have a more reliable influence on the decision to found one's own firm than have psychological traits (Reynolds, 1991; Stanworth *et al*, 1989).

A response to the limited success of the trait approach has been to view firm creation in context. One way of doing this is to apply a more aggregate level of analysis and to look for regional or national level variables that can explain variations in the *rate* of new firm formation (Aldrich & Wiedenmayer, 1993). This approach has been relatively successful; strong and generalizable relationships have been established (Davidsson, Lindmark & Olofsson, 1994; Reynolds, Storey & Westhead, 1994).

But there is still a need for disaggregate level understanding of the processes leading to new firm formation. Therefore, researchers have tried to develop integrated explanatory models that take into account not only the general psychological characteristics of (prospective) entrepreneurs, but also domain-specific attitudes, personal background, and situational variables (e.g., Bird, 1993; Shaper & Sokol, 1982; Shaver & Scott, 1991).

A particular branch of this approach focuses on the pre-decision stage (i.e., interest, entrepreneurial career preference, characteristics of nascent entrepreneurs, cf. Bird, 1988; Boyd & Vozikis, 1994; Krueger, 1993; 1994; Krueger & Brazael, 1994; Krueger & Carsrud, 1993; Matthews & Moser, 1995; Reynolds, 1995; Scherer, Brodzinsky & Wiebe, 1991; Scherer *et al*, 1989; Scott & Twomey, 1988). Given that the decision to found a firm can be regarded as reasoned action or planned behavior--which seems reasonable--the relationship

² In this paper I have chosen to use "entrepreneurship" and "new firm formation" as synonyms. Likewise, an "entrepreneur" is a person who founds his/her own firm. It is acknowledged that this common practice in empirical entrepreneurship research is certainly not unquestionable (cf. Davidsson, 1992). Many new, independent firms show a low level of innovativeness and very similar behavior and effects occur in other contexts than the small, independent firm. Among suggested formal definitions of entrepreneurship the one used here is largely in line with Gartner's (1988) "entrepreneurship is the creation of new organizations".

between intentions and actual behavior should be fairly strong (Ajzen, 1991; Sheppard, Hartwick & Warshaw, 1988).

If so, the study of entrepreneurial intentions has some distinctive advantages over comparisons between entrepreneurs and non-entrepreneurs. Firstly, new firm formation is always a minority phenomenon, and the factors that influence this choice can also manifest themselves in other (psychologically related) behavior. Therefore, *no* distal variables can *ever* be expected to predict (narrowly defined) entrepreneurial behavior with high accuracy. In contrast "the intentions-based approach offers testable, theory-driven models of how exogenous factors [demographics, traits, current situation] affect [entrepreneurial] attitudes, intentions, and behavior" (Krueger & Carsrud, 1993, p. 316). Secondly, the approach avoids the fallacy of identifying as determinants of entrepreneurial behavior such individual characteristics that in fact develop *as a consequence* of running one's own business. It can, e.g., be debated whether an internal locus-of-control (cf. Rotter, 1966; Brockhaus, 1982) makes people found their own firms, or if the factual situation of firm owner-managers is such that they (justifiably) perceive more power to control their destiny. Finally, for the purpose of policy decisions aimed at stimulating new firm formation it is more useful to know what kind of individuals do and do not consider going into business for themselves, than to learn about the characteristics of those who already did so. Reynolds (1995) is a good illustration of the potential of this kind of research for such purposes. Insights into the antecedents of entrepreneurial intentions may also give hints as to what type of policy measures would be instrumental in turning prospective entrepreneurs into real business founders.

2. Purpose

The purpose of the present paper is to develop and empirically test an economic-psychological model of the determinants of entrepreneurial intentions. The purpose is not so much to introduce entirely new insights in terms of new explanatory variables. Rather, the intended contribution is:

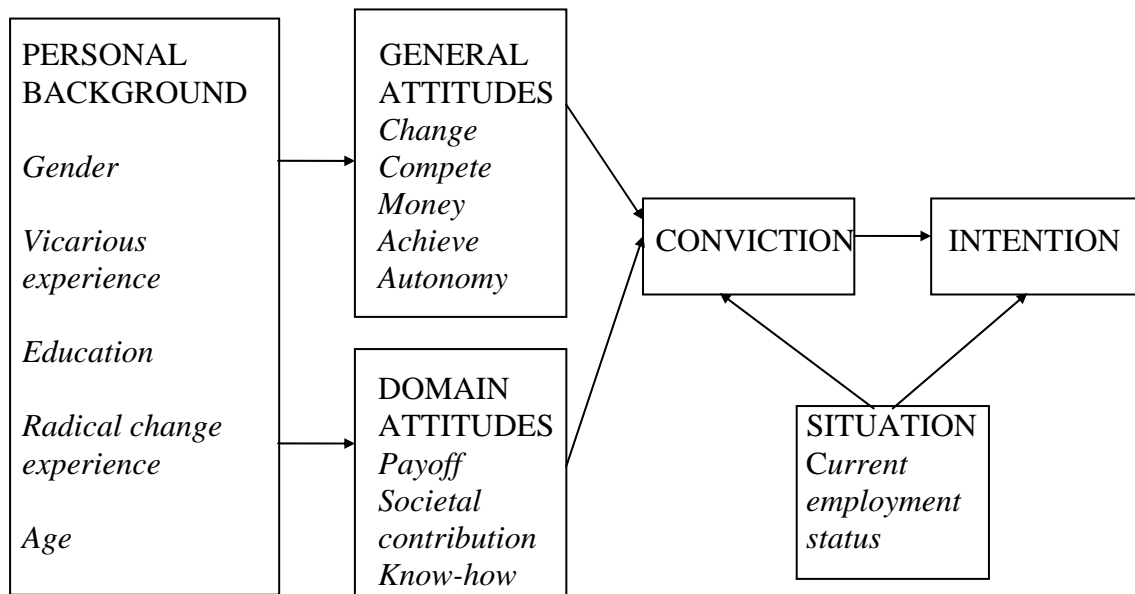
- 1) To integrate different types of determinants that have been used and discussed within various approaches into *one model*, and hence to make possible an assessment of their *relative importance* as well as their status as *direct or indirect* influences on entrepreneurial intentions.
- 2) To test this model on a *large sample* from a relevant age cohort of the general population, so that also relatively weak influences can be established with satisfactory statistical certainty. Theoretical models that *correctly* include variables that only have limited influence on each individual, or that are of importance only for a minority, will never be supported by empirical tests of small samples when conventional significance criteria are employed (i.e., the problem of low power).
- 3) Test the model on *several independent samples*, so that the stability or generalizability of the results can be determined.

3. The model and its rationales

The model that has guided the empirical analyses to follow is depicted in Figure 1. The main influences behind the development of this model are:

- a) Previously presented models that attempt to integrate empirical research findings about the determinants of entrepreneurial intentions and behavior, especially Bird (1993), Shapero & Sokol (1982) and continued work that build on the latter of these models (Krueger & Brazael, 1994; Krueger, 1993; 1994). Other models that have been used for comparison include those proposed by Bird (1988), Boyd & Vozikis (1994), Campbell (1992), Katz (1992), Krueger & Carsrud (1993), Martin (1984), Naffziger, Hornsby & Kuratko (1994) and Scott & Twomey (1988).
- b) Empirical research on the characteristics of entrepreneurs/business founders (cf. Brockhaus, 1982; Brockhaus & Horwitz, 1986; Stanworth *et al*, 1989) or nascent entrepreneurs (Reynolds, 1995). That is, like most of the above-mentioned models also this particular one has been developed with previous empirical findings as one starting point.
- c) Aggregate level results concerning structural and cultural influences on new firm formation rates and rates of economic growth (Davidsson, 1995c; McClelland, 1961; Lynn, 1991; Reynolds, Storey & Westhead, 1994).
- d) Basic economic theory and psychological theories, e.g., social learning theory (Bandura, 1986) and the theory of planned behavior (Ajzen, 1991).

Figure 1 An economic-psychological model of determinants of entrepreneurial intentions



The reasoning behind the relationships suggested by the model will be clarified below. Additional information about the specific measures used will be given later in Table 2.

Intention. The decision to start a new firm is assumed to be planned for some time and thus preceded by an intention to do so. However, in some cases this intention is formed only shortly before the actual decision and in some other cases the intention never leads to actual behavior. Hence, entrepreneurial intentions are assumed to predict, although imperfectly, individuals' choice to found their own firms.

Conviction. The model suggests that a major determinant of entrepreneurial intention is the individual's conviction that this career is a suitable alternative for him/her. This concept is similar to *perceived self-efficacy*, which has been included in previous theoretical expositions (Boyd & Vozikis, 1994; Krueger & Brazael, 1994; Krueger & Carsrud, 1993) as well as in empirical research on entrepreneurial intentions and behavior (Scherer *et al.*, 1989; Krueger, 1994). However, the operationalization involves not only items of the "I would manage (and like) running my own firm" kind, but also items suggesting that such a choice would be *instrumental* in terms of improving one's economic standard or make it possible to stay in the preferred place of living. The conviction variable can be regarded as a variety of A_{act} in Ajzen-Fishbein type attitude models (Ajzen & Fishbein, 1980). Further, conviction is a central concept in Rogers' (1983) model of adoption of innovations; a process which should not be psychologically completely dissimilar from the process leading to the decision to found one's own firm.

Situation. The importance of situational factors for the entrepreneurial decision is highlighted in the models proposed by Bird (1993), Martin (1984) and Shapero & Sokol (1982). What the authors discuss is factors like "displacement", being "between things", or facing a "window of opportunity" or "free-choice period". The current employment status--and changes in it--can be assumed to be one of the most important situational influences. Although not all studies reach the same conclusion (cf. Hamilton, 1989; Reynolds, 1991) various types of research have indicated a positive relationship between unemployment and firm formation (cf. Davidsson, Lindmark & Olofsson, 1994; Reynolds, Storey & Westhead, 1994; Storey, 1994) and even that this type of response to unemployment has increased in importance over time (Hamilton, 1988). During the recent deep recession in Sweden, close to 30 percent of the business founders stated that avoiding unemployment was the prime reason for founding their own firms (SCB, 1994). In the US, Reynolds (1995) recently found comparatively high proportions of nascent entrepreneurs (i.e., people who are in the process of founding their own firm) among students and the unemployed, whereas very low proportions were found among homemakers and those in retirement.

In empirical testing, situational variables can be assumed to have their strongest influence directly on behavior, or on the strength of the relationship between intentions and behavior (cf. Krueger & Carsrud, 1993). Reynolds' (1995) results suggest that a noticeable influence on pre-decision variables should also be assumed. In the model in Figure 1, current employment status is assumed to affect intention (since firm formation is considered planned behavior) and conviction (because the reactions to some of the items in that index are likely to be sensitive to the respondents current situation).

General attitudes. Before going into detail, it should be mentioned that the crucial difference between "general attitudes" and "domain attitudes" in the present context is that the measures (agree-disagree statements) of the former are more general and make no mention of

entrepreneurship or small firms, while the items used for the latter are domain-specific and explicitly concern these latter issues.

A number of general attitudes that previous research suggests may be of importance in this context were included in the study. The assumption is that having more (less) of the included kind of general attitudes would make it more (less) probable that individuals' come to hold the conviction that founding their own firm is a suitable alternative for them. The first, *Change-orientation*, is akin to Ronen's (1983) reasoning about "quest for novelty" as a driving force for entrepreneurs (cf. also Wärneryd, 1988). The measure should reflect a general favourable-unfavourable disposition towards major life changes.

Competitiveness stood out as the most important variable in Lynn's (1991) study of the relationship between national culture and economic growth. Assuming that this aggregate result reflects individual level entrepreneurship it should be relevant in the present context. A high *Valuation of money* was the second most important variable in Lynn's (1991) study, which apart from rationalistic assumptions in economic theory is the reason for its inclusion here. It should be noted, though, that the prospect of making more money typically ranks low in entrepreneurs' stated motivations for founding their own firm (Bamberger, 1986; Cromie, 1988; Hamilton, 1988) and especially much so in Scandinavian countries (Scheinberg & MacMillan, 1988). The measures of competitiveness and valuation of money are the same as those used in Lynn's study (translation and validation in Swedish by Ekehammar & Niemenmaa, 1992).

Achievement Motivation is perhaps the most used--and the most criticized--psychological concept in entrepreneurship research (cf. Davidsson, 1989, 1991; Wärneryd, 1988). McClelland (1961) himself postulated an individual level relationship with the propensity to go into business for oneself. The general conclusion from empirical research is that this type of influence exists but that achievement motivation is not a major determinant of entrepreneurial behavior. A meta-analysis reported a positive relationship in 20 out of 23 studies employing various operationalizations of *nAch* and entrepreneurship (Johnson, 1990, cit. in Shaver & Scott, 1991). Competitiveness and achievement motivation are similar concepts and positively correlated in these data. They are not, however, alternative labels for the same psychological reality. Competitiveness concerns comparison with other people, whereas achievement motivation is more related to performance compared with an individual's internal standards.

Across countries, the need for *Autonomy* (or independence) is one of the most frequently stated reasons for founding a firm or wanting to do so (Bamberger, 1986; Cromie, 1988; Hamilton, 1988; SCB, 1994; Scheinberg & MacMillan, 1988; Scott & Twomey, 1988).

Domain attitudes. The first domain attitude variable is expected *Payoff*. This index is a composite of beliefs concerning the workload, risk, and financial gain to be expected by a business founder. Hence, it concerns the type of expected outcomes that would typically be included in an explanatory model based on microeconomic utility theory or Expectancy Theory (Vroom, 1964). For example, an operationalization of Campbell's (1992) rationalistic model of determinants of entrepreneurial acts would lean heavily on this type of beliefs.³

³ Originally, the intention was to use separate indices for expected workload, risk, and financial gain. It is an interesting finding in itself that empirically these sets of perceptions tend to be highly interrelated. It suggests that individuals make

The second domain attitude variable, *Societal contribution*, concerns the extent to which respondents perceive entrepreneurs' actions as being valuable to society. The inclusion of this dimension takes into consideration the finding that at least in some cultures, other-directed motivations may be important for business founders (Scheinberg & MacMillan, 1988; McGrath *et al*, 1992). While Hofstede (1980) identifies Sweden as an individualistic country, this kind of perception may be of importance at least for some (prospective) entrepreneurs.

Payoff and societal contribution attitudes concern the respondents' beliefs about what is true for business founders and business owner-managers in general. The third domain attitude variable, perceived *Know-how*, is more orientated to the self.. This measure concerns whether the respondent would know what to do if s/he came up with a good business concept and wanted to realize it. As pointed out by Shaver & Scott (1991) the effects of background factors such as educational attainment and vicarious experience are likely to be mediated by variables like perceived know-how.⁴

Personal background. Consistent relationships have been established between certain personal background variables on one hand, and entrepreneurial behavior on the other (Stanworth *et al*, 1989). As regards *Gender* there is a substantial overrepresentation of males among business founders in most countries (cf., e.g., de Wit & van Winden, 1989, for the Netherlands and SCB, 1994, for Swedish evidence). Contrary to recent popular reports of a trend reversal, Reynolds' (1995) comprehensive study found more than twice as many nascent entrepreneurs among males than among females in the US. Matthews & Moser (1995) also report higher interest in business ownership among males than among females. At least within entrepreneurship research much less seems to have been learnt about the mediators between gender and intention. Scherer *et al* (1990) refer to studies, which have established that women have lower perceptions of self-efficacy for careers in which they are underrepresented. This means that a relationship between gender and conviction need not be mediated by attitudes of the kind included in this study, except perhaps for perceived know-how. Achievement motivation and competitiveness as mediators can be inferred from Hofstede's (1980) research.

holistic evaluations of the effort-risk-financial gain associated with an entrepreneurial career rather than weighing expected gain against effort and risk.

⁴ It may be in place to clarify here the difference between know-how and conviction. Admittedly, both are self-centered "domain attitudes". The two concepts are distinct both conceptually and empirically. Conceptually, know-how concerns whether the respondents *would be able to* found a firm if s/he wanted to do so. It is perfectly possible to feel able without being attracted. Conviction, on the other hand, concerns whether the respondent feels that running his/her own firm would be *a suitable alternative* for him/herself, given his/her capabilities and life situation. Such feelings should be more closely related to behavior than mere know-how beliefs, and that is the conceptual reason for breaking our conviction from other domain attitudes. Empirically, a factor analysis with all items from both indices yields two factors with eigenvalues greater than unity.

Apart from the overrepresentation of males the most consistent result in entrepreneurship research is the marked over-representation, among those who found their own business, of individuals with close role models. In large-scale studies conducted by the author, about 40 percent of small business owner-managers have had a self-employed parent, compared with about 15 percent of other vocational groups (three separate studies with 400-1500 respondents; this particular result previously unpublished). In a survey of more than 600 respondents in the UK between 30 and 47 percent of individuals either considering, about to start, or in business, had a father who had also been in business. This is to be compared with some 20 percent of employees generally (Storey, 1994, pp. 63-64). No role model variable was included in Reynolds (1995) study, but similar results have been reported in a multitude of other studies, very convincingly so by, e.g., de Wit & van Winden (1989).

For a long time relatively little theoretical interest was devoted to this very consistent finding. Recently, however, it has been highlighted in contributions that take a social learning perspective on entrepreneurship (Boyd & Vozikis, 1994; Krueger, 1994; Krueger & Brazael, 1994; Scherer *et al*, 1989; 1991). This has led to an interest not only in the presence of role models, but also on the qualitative aspects. Scherer *et al* (1989) found that mere presence of a role model, and the role models' perceived performance, had separate and additive positive effects on "entrepreneurial preparedness" and "entrepreneurial career expectancy". Krueger (1993) found a positive relationship between perceived "positiveness" of the role model experience and perceived desirability of founding a firm.

The role model effect is here conceived of as an example of the effects of *Vicarious experience*, which in turn is a major source of self-efficacy (cf. Boyd & Vozikis, 1994). If so, it should directly or indirectly affect conviction. Another way to obtain vicarious experience of entrepreneurship is to work in a small, owner-managed firm. A gross overrepresentation of individuals' with small firm work experience has been reported in studies of manufacturing firm founders. It is doubtful, however, whether the same holds true for start-ups in the service sector (including retailing etc.), which now constitute some 80-90 percent of all business start-ups (Storey, 1994 p. 64; Davidsson *et al*, 1994).

Previous results concerning the relationship between *Education* and entrepreneurship are very mixed (Davidsson, 1989; Storey, 1994). In Sweden the case seems to be that traditionally, business founders had lower than average formal educational attainment, whereas in recent years the new business founders have had above average education (Wärneryd, Davidsson & Wahlund, 1987; Aronsson, 1991). Comprehensive data from the US indicate that groups with lower education show less of an interest in an entrepreneurial career (Reynolds, 1995; Reynolds & Miller, 1990). On these grounds, a positive influence of education on intention is hypothesized, although it should be acknowledged that such a relationship is contingent on the opportunity cost situation (cf. Campbell, 1992; Wärneryd *et al*, 1987). That is, the relationship becomes complex because people with higher education may have better chances of success and attainment of personal goals not only as business owner-managers, but also as employees. While previous entrepreneurship research provides little input for hypotheses concerning how attitudes mediate effects of education, know-how beliefs is one candidate, especially as concerns business education.

It is well known that immigrants and certain ethnic minorities are over represented as business founders (Shapero & Sokol, 1982; Storey, 1994). We therefore assume more of entrepreneurial intention among immigrants. Many reasons for such a relationship have been

suggested: discrimination or relative deprivation, cultural norms and mores, self-selection of change-oriented individuals among immigrants, etc. (Hagen, 1962; Stanworth & Curran, 1973). These different explanations are all likely to convey part of the truth. We here conceive of the presumed relationship as an effect of experience with *Radical change*. Admittedly, this interpretation must also be only partly valid. However, if experience with radical change increases the probability of founding one's own firm, then native Swedes who have lived in several different places should be more prone to found businesses than those who have stayed in the same place their entire life. Reynolds' (1995) results supports this belief, and the number of places lived in will therefore be included as another aspect of the radical change dimension. Apart from change-orientation it is not obvious what particular attitudes should be expected to act as mediators. Comparative research on national culture suggests that immigrants on average would score higher on competitiveness, valuation of money, and possibly also achievement motivation (Lynn, 1991; Hofstede, 1980). If immigrants have higher intention and this is based on discrimination rather than experience with radical change, then an influence via expected payoff should be expected. It should be acknowledged that in a cross-sectional analysis the interpretation of causal nature and order between personal background and attitudes is especially problematic for the indicators of experience with radical change. This is so because enduring personal characteristics may be the reason for their exhibiting themselves to radical change earlier in life *and* for being prepared to do so again by founding their own firm. Caution is therefore called for when interpreting the results.

Finally, previous studies clearly point out *Age* as an important factor for determining a person's propensity to found a firm (cf. Brockhaus, 1982; Reynolds, 1995). The relationship is curvilinear, with a peak somewhere around 35 years of age. While age is included in the theoretical model in Figure 1, that variable will not be used in the empirical analyses reported below. The simple reason for this is that the used sample is drawn from a very narrow age span. Marked age effects are therefore not to be expected.

A central question for the analyses to follow is the extent to which personal background influences are direct or indirect. In the present context this question falls into two parts. The first is whether personal background factors have any effects at all on entrepreneurial intention. The second is whether an influence on intention is mediated by attitudes. Theoretically, it is in most cases sensible to assume that the influence of personal background variables is mediated in that way (cf. Krueger & Carsrud, 1993 p. 326). In some cases more direct effects are theoretically feasible. In the analyses, the starting point is the assumption--which will be put to test--that personal background influences on conviction and intention are indirect. If the model is successful in explaining empirical relationships in the data, high explanatory power should be obtained with regard to intention and conviction, and no or only weak direct effects not included in the theoretical specification should emerge. High explanatory power with respect to attitudes is not expected. The important thing about these variables is to estimate whether or not they act as mediators for personal background influences.

4. Method

The data for this research was collected for dual purposes. Apart from the purpose of studying individual level relationships, a second purpose was to seek cultural explanations for regional (Labor Market Area) differences in firm start-up rates (results concerning this latter purpose

have been reported in Davidsson, 1995d, and Davidsson & Wiklund, 1995). It was decided that the respondents should be in a life-cycle stage where founding one's own firm is comparatively common. For these reasons, we have six separate (regional) samples from the general population of 35-40 years old individuals. Descriptive data on the samples are given in Table 1.

The data were obtained by means of mail questionnaires in March-April, 1994. As can be seen in Table 1, response rates above 70 percent were obtained (after two reminders) in each of the six regions, for a total response rate of 73 percent. This guarantees high quality of the data in terms of representativeness.

Table 1 Sample characteristics

<i>Region (LMA)</i>	<i>Sample size</i>	<i>No. of useful responses</i>	<i>Response rate</i>	<i>Percent with entrepreneurial experience^a</i>
Kristianstad	300	230	76.7%	21.3%
Karlskrona	300	216	72.0%	9.7%
Katrineholm	300	220	73.3%	21.3%
Nyköping	300	219	73.0%	17.4%
Köping	300	212	70.7%	19.3%
Karlskoga	300	216	72.0%	13.4%
Total	1800	1313	72.9%	17.3% (225)

^a Includes full-time and part-time business owner-managers as well as ex-entrepreneurs.

It should be noted that the nature of the sample is one unique characteristic of this research. The author knows of no related study that even comes close in terms of size of the total sample, the possibility of six replications within one study, and the high response rates. Reynolds' (1995) study is a partial exception, but that study is much more narrow in scope as regards the type of explanatory variables that are included.

In the analyses the sample will be used in three ways. First, all individuals except those with entrepreneurial experience are included in the analyses. Deducting also individuals with internal non-response for one or more of the intention indicators leaves us with a total sample of 1066 individuals. Other internal non-response may reduce the number of respondents slightly in the some analyses. Secondly, the stability of the results is examined by repeating some of the analyses for separate samples. Thirdly, gender differences are examined by repeating some analyses for males and females in the total sample separately.

Table 2 gives summary information about the measures used in the study. Information about operationalization was also given above when the model and its rationales were discussed. See also Table A2 in the appendix. It should be added here that the ultimate dependent variable, intention, was measured by an index of three questions: "Have you ever considered founding your own firm?" (with three response categories from "never occurred to me" to "have seriously considered") and "How likely do you consider it to be, that one [five] year[s] from now you run your own firm?" (five response categories from "not likely at all" to "dead certain"). These three variables were first standardized, then summed. The resulting index has a Cronbach alpha of 0.84. This variable, which will be used in the bivariate analysis, has a zero mean, a range from -3.3 to 9.6, and a standard deviation of 2.6. The intentions variable thus has not a normal distribution. Therefore, a logarithmical version is used in the multivariate analysis (mean=0.53; s.d.=0.31; range: 0-1.14). Even after this transformation the intention variable is not randomly distributed and the reported significance levels are therefore not strictly valid.

Table 2 Explanatory variables used in the analyses

<i>Variable group</i> Variable	<i>Index'</i> No of items	<i>Cron-</i> <i>bach α</i>	<i>Mean</i>	<i>Range</i> <i>used</i>	<i>Description</i>
Conviction	5	.77	11.7	5-20	see Table A2, appendix
<i>General attitudes</i>					
Change	4	.58	10.4	4-16	see Table A2, appendix
Competitiveness	5	.76	12.1	5-20	see Table A2, appendix
Money	4	.70	7.2	4-16	see Table A2, appendix
Achievement	4	.60	10.7	4-16	see Table A2, appendix
Autonomy	4	.60	10.4	5-16	see Table A2, appendix
<i>Domain attitudes</i>					
Payoff	9	.73	19.1	9-32	see Table A2, appendix
Societal contribution	4	.52	11.8	4-16	see Table A2, appendix
Know-how	2	.77	4.4	2-8	see Table A2, appendix
<i>Variable group</i> Variable	<i>Scale</i> <i>type</i>	<i>Pct of</i> <i>used</i> <i>sample</i>	<i>Mean</i>	<i>Range</i> <i>used</i>	<i>Description</i>
<i>Current employment status</i>					
Permanent	dummy	71%			"What is your current main occupation?" (6 categ.) self-explanatory
Temporary	dummy	5%			-"
Unemployed	dummy	9%			-"
Student	dummy	6%			-"
Gender = Male	dummy	47%			-"
<i>Vicarious experience</i>					
Small firm work	dummy	35%			Independent; <50empl; >1 year
Father	dummy	15%			Father self-employed
Spouse	dummy	9%			Spouse -"
Lacks model	dummy	20%			No close relative/friend self-employed
Model perception.	ordinal		3.5 ¹	1-5	Very positive-Very negative
<i>Education</i>					
Level	ordinal		2.6	1-5	Primary-University
Business orien.	dummy	5%			Highest education business focused
<i>Radical change</i>					
Immigrant	dummy	7%			Born outside of Sweden
Mover	ordinal		2.0	1-3	No. of places lived in >1 year: 1, 2-3, or >3 places

Note: 1) For respondents with no role model (20%), the mean value was inserted.

All attitudes were measured by 4-point agree-disagree statements. Three other general attitude measures were included in the study but excluded from the analyses presented in this paper: Locus-of-control, "Jante-mentality", and Acceptance of capitalism. The reasons for their exclusion were either low internal consistency of the item responses, or lack of empirical relationships with the target variable(s). The same is true for two additional domain attitude measures: Perceived difficulty and Social status (cf. Davidsson, 1995d; Davidsson & Wiklund, 1995). Other indicators of vicarious experience were also available, but those used here suffice to communicate the essence of the empirical relationships.

As regards analysis method, bivariate results regarding the relationships between personal background and entrepreneurial intentions will be reported first. For the main analysis, separate multiple regression analyses will be reported with intention, conviction and each attitude variable as the dependent variable.⁵ In the full sample analyses with intention or conviction as dependent variable, a first analysis included only those explanatory variables that should have an effect on the target variable according to the model specification in Figure 1. Those variables that were statistically significant were retained. Starting with this solution (referred to as "Base model" in the tables) a second run added all variables "further back" into the analysis, and those that had a statistically significant effect were included in the empirical model via a stepwise procedure⁶. Both equations will be reported (tables 3 and 5). In analyses of separate sub-samples, the explanatory variables from the latter solution (referred to as the "All variables model") were included. In the analyses with attitudes as target variables, all personal background variables were included in a stepwise regression, and significant variables were retained.

5. Results

Mean differences in entrepreneurial intention for various personal background variables are reported in Table 3. The bivariate results clearly show that all differences are in the expected direction. It is also the case with one exception that the difference between the highest and the lowest group are statistically significant at very low risk levels ($p < 0.002$ or less, single-tailed t-test and Mann-Whitney U-test. The exception is the business education effect, which is significant only at $p < 0.05$). The effect of education level does not appear to be linear. It is those with the lowest education who deviate in the negative direction; a result that accords well with American findings (Reynolds, 1995).

Interestingly, the largest absolute difference by far appears for the role model perception variable. To make the magnitude of this difference more comprehensible, the following figures may serve a purpose: among those 27 respondents who have received a very negative impression through a role model, nobody (0 percent) states that it is rather likely, very likely or dead certain that they will run their own business in five years time. This proportion then increases in an almost perfectly linear fashion, so that the corresponding percentage is 39 percent for those with a very positive role model perception (117 respondents). This corroborates earlier findings that not only presence of role models but also what they communicate is of utmost importance.

⁵ The author's intention is to analyze the material with structural equation modeling techniques later on.

⁶ Occasional "manual" adjustments were made for effects that were theoretically unfeasible as causal effects. That is, a negative direct effect of Payoff on Intention. This effect probably occurs because while individuals with parental role models have more modest (realistic?) Payoff beliefs they are nonetheless more likely to have entrepreneurial intentions.

Table 3 Bivariate results for personal background factors and entrepreneurial intention

<i>Variable group</i>	Intention index score	Valid cases
<i>Variable</i>		
<i>Gender</i>		
	.65	498
Males	-.58	568
Females		
<i>Vicarious experience</i>		
Father self-employed	.67	160
Father not self-employed	-.12	899
Has some role model (relative/friend)	.28	855
Has no role model	-1.15	204
1. Role model perception very negative	-1.56	27
2.	-.70	58
3.	-.25	333
4.	.78	310
5. Role model perception very positive	1.42	117
>1 year small firm work experience	.84	374
<1 year small firm work experience	-.46	692
<i>Education</i>		
Primary school only (9 years)	-.34	249
Primary + 2 years secondary	-.07	361
Primary + 3-4 years secondary	.51	154
Some post-secondary	-.11	173
Full university education (min. 3 years)	.37	123
<i>Radical change experience</i>		
Has lived in just one place all life	-.61	276
Has lived in 2-3 places	.09	544
Has lived in 4 or more places	.50	243
Grew up same place as current	-.19	590
Grew up other place, same part of country	-.14	270
Grew up other part of country	.57	129
Grew up abroad	.98	74

All in all the bivariate results determine that a number of personal background factors which previous studies have found to be characteristic for business founders also co-vary systematically with entrepreneurial intentions. Indirectly, this is a strong case for the assumption that intentions are valid predictors of entrepreneurial behavior. In the multivariate

analyses to follow, we address the extent to which the effects of personal background is mediated by general and domain attitudes--as suggested by the model in Figure 1--or if personal background factors affect entrepreneurial intentions directly.

In Table 4 the results concerning explanations of variations in intention are displayed. The suggested Base model receives support in several ways. Firstly, the explanatory power is rather high; 46 percent of the variation is accounted for by variations in conviction and current employment status. Secondly, all variables included in the Base model are ascribed significant effects with the appropriate sign. The positive sign for permanent employment may appear odd but is reasonable when all other employment status dummies are included considering that the groups not covered by the included dummies are homemakers and other groups who are more or less permanently not in the work force. As regards employment status the results reported here largely mirror those obtained by Reynolds (1995) for nascent entrepreneurs in the US.

Further support for the Base model is that when eight other variables are entered the explanatory power rises by only five percentage points. In addition, none of the significant direct effects is strong, and only the "lacks model" variable receives a standardized coefficient of a magnitude that would be judged significant with more normal sample sizes. This all means that it cannot be ruled out that the statistically significant direct effects that turn up in estimation do so because of imperfect measurement of the conviction variable. Hence, they cannot be regarded as evidence that the theoretical specification in Figure 1 is incorrect.

The results for separate regional samples (Table A1, appendix) show a great deal of stability as regards total explanatory power and the strong influence of conviction. The results are also largely in line with the notion that current employment status has a direct influence on intention. However, these effects appear to be small, and none of the employment status dummies are ascribed an effect with consistent sign across the six samples. Apart from "lacks model" the same goes for the added attitudes and personal background variables. This suggests that including a direct effect of vicarious experience on intention in the theoretical model may be justified. Otherwise, the unexpected direct effects are too small and/or uncertain to warrant such adjustments. Knowing that males are grossly over represented among entrepreneurs, and that males in this sample have substantially higher mean intention, the absence of a strong direct gender effect is especially worth noting.

Table A1 (appendix) also reports separate results for males and females. The most remarkable finding is that the processes leading to entrepreneurial intention are not markedly different for the two sexes. Since the samples are large it may perhaps be hypothesized that males' intentions are somewhat more contingent on perceptions of entrepreneurs' societal contribution, while females' intentions are slightly more contingent on perceived know-how.

All in all, conviction stands out as *the* primary explanation for variations in entrepreneurial intention. This emphasizes the need to develop an understanding for the factors leading to conviction. Before going into that, however, let us elaborate somewhat on the relatively weak effects of current employment status on intention. This result is somewhat surprising, and it can be suspected that situational influences on the actual decision to found a firm is much stronger than these results suggest. If such were the case, we would also expect current employment status to be more strongly related to shorter term than to longer-term intentions.

Table 4 Multiple regression models for entrepreneurial intention

<i>Variable group</i> Variable	Base Model			All variables model		
	<i>Unstand. coeff.</i>	<i>Stand. coeff.</i>	<i>p</i> <	<i>Unstand. coeff.</i>	<i>Stand. coeff.</i>	<i>p</i> <
Conviction	.07	.66	.0001	.05	.52	.0001
<i>Current employment status</i>						
Permanent	.05	.08	.02	-	-	-
Temporary	.16	.11	.0001	.11	.08	.0002
Unemployed	.09	.09	.003	.04	.04	.05
Student	.10	.07	.005	-	-	-
<i>General attitudes</i>						
Change				.01	.07	.002
Competitiveness				-	-	-
Money				-	-	-
Achievement				.01	.06	.01
Autonomy				-	-	-
<i>Domain attitudes</i>						
Payoff				-	-	-
Societal contribution				.01	.09	.0001
Know-how				.01	.08	.0004
<i>Gender</i>						
Male				.03	.05	.02
<i>Vicarious experience</i>						
Small firm work exp.				.04	.06	.004
Lacks model				-.09	-.11	.0001
Model perception				.02	.05	.01
<i>Education</i>						
Level				-	-	-
Business orientation				-	-	-
<i>Radical change</i>						
Immigrant				-	-	-
Mover				-	-	-
(Constant)	-.31		.0001	-.61		.0001
R ²	.46			.51		

Note: In this and in following tables, a blank position means that the variable was not included while a dash denotes that the variable did not have a statistically significant effect and therefore was excluded.

As one of the intention items concerns one-year probability and another five-year probability, this can be empirically tested. This analysis is displayed in Table 5.

Table 5 The differential influence of current situation on short and longer term intentions

<i>Variable group</i> Variable	One year probability			Five year probability		
	Unstand. coeff.	Stand. coeff.	p<	Unstand. coeff.	Stand. coeff.	p<
Conviction	.35	.53	.0001	.19	.63	.0001
<i>Current employment status</i>						
Permanent	.13	.08	.03	.05	.02	n.s
Temporary	.37	.11	.0003	.32	.07	.005
Unemployed	.38	.15	.0001	.17	.05	.05
Student	.35	.11	.0002	.21	.05	.04
(Constant)	-.11		n.s.	-.32		.002
R ²	.32			.42		

The results are clearly in line with the notion that as the dependent variable comes closer to behavior, the relative importance of situational variables increases. In particular, the effect of unemployment on the intention to found a firm is much stronger when one-year probability of business entry is used as the dependent variable.

Let us now turn to the explanatory model for conviction (Table 6). In support for the theoretical model specification, significant effects emerge for current employment status and for general as well as domain attitudes. The explanatory power is reasonably high. The effects of current employment status are weak, however, and in the All variables model only permanent employment is retained with a negative effect. That is, compared with all other groups those in permanent employment are on average less convinced that founding their own firm is a suitable alternative for themselves (which seems reasonable). The effects of the included general attitudes are all positive as expected and fairly similar in magnitude, with the exception that the valuation of money variable is ascribed only a very weak effect in the Base model. In the All variables model it is excluded.

The relatively strongest influence is ascribed to expected payoff and--in particular--perceived know-how. The latter result is interesting since this is a "workable" variable from a policy-making point of view. Perceptions of entrepreneurs' societal contribution appear relatively unimportant for explaining conviction. This is in line with previous findings on Scandinavian entrepreneurs' relatively individualistic start-up motivations.

In this case the All variables model suggests more of substantial changes of the original theoretical specification. Both for gender and for vicarious experience the results suggest that direct effects be included. In the latter case the effects ascribed to individual variables are not strong, but in combination they certainly suggest that vicarious experience directly affect conviction. Both presence and quality of role models appear important. As was noted above, the direct gender effect may be due to female under representation among entrepreneurs. If so,

the two direct effects that are added are also related, since females relatively more often lack small firm work experience and the closest type of role model: the parent of the same sex.

Table 6 Multiple regression models for conviction

<i>Variable group</i> Variable	Base Model			All variables model		
	<i>Unstand. coeff.</i>	<i>Stand. coeff.</i>	<i>p</i> <	<i>Unstand. coeff.</i>	<i>Stand. coeff.</i>	<i>p</i> <
<i>Current employment situation</i>						
Permanent	-.85	-.13	.001	-1.05	-.16	.0001
Temporary	-	-	-	-	-	-
Unemployed	.59	.06	.03	-	-	-
Student	-	-	-	-	-	-
<i>General attitudes</i>						
Change	.19	.13	.0001	.21	.14	.0001
Competitiveness	.13	.13	.0001	.11	.10	.0003
Money	.07	.05	.04	-	-	-
Achievement	.14	.10	.001	.12	.09	.003
Autonomy	.21	.14	.0001	.21	.14	.0001
<i>Domain attitudes</i>						
Payoff	.16	.18	.0001	.11	.13	.0001
Societal contribution	.14	.08	.001	-	-	-
Know-how	.48	.26	.0001	.42	.23	.0001
<i>Gender</i>						
Male				1.09	.18	.0001
<i>Vicarious experience</i>						
Small firm work exp.				.50	.08	.001
Lacks model				-.54	-.08	.002
Model perception				.44	.12	.0001
<i>Education</i>						
Level				-	-	-
Business orientation				-	-	-
<i>Radical change</i>						
Immigrant				-	-	-
Mover				-	-	-
(Constant)	-2.24			-.59		
R ²	.35			.40		

The results for separate regional samples (Table A2, appendix) are strikingly stable. Every included variable appears with an effect of the same sign in each sub-sample analysis. Another generality is that know-how is among the top three in terms of relative influence in each sub-sample. In addition, significant direct effects of gender and/or vicarious experience appear in each separate analysis. With regard to the separate analysis of male and female respondents, the similarities are again more striking than the differences. The differential influences for change and achievement, which run in opposite directions as to relative importance, should probably not be taken too seriously. These two variables are fairly highly interrelated and their ascribed separate effects therefore somewhat uncertain. The relatively greater importance ascribed to payoff for females may be real and explained by systematically different opportunity costs for males and females.

The results concerning the effects of personal background variables on attitudes are summarized in Table 7. The following observations can be made:

- The explanatory power is generally low. That is, the larger part of the variation in attitudes is likely to be attributable to more idiosyncratic experiences than the general personal background factors included in the models.
- With one small exception, each variable group is ascribed at least some significant effect on each general and domain attitude variable.
- The gender difference in entrepreneurial intentions is partly mediated by differences in attitudes. Both for general and domain attitudes the effects run in the same direction: males are more likely than females to hold attitudes that positively affect entrepreneurial conviction and intention.
- Small firm work experience has a small effect on perceived know-how but no other effects on attitudes.
- Both presence of role models and the perception of the merits of an entrepreneurial career transmitted by those role models generally have positive effects on attitudes. However, having a very close role model (father, spouse) leads to relatively lower expected payoff.
- In line with the bivariate results and the assumptions underlying the theoretical model, but unlike previous multivariate analyses, effects are ascribed also to education and experience with radical change. This means that effects of these types of personal background factors on intentions are fully mediated by attitudes. They may still have direct effects on entrepreneurial behavior without affecting conviction and intention.
- Apart from negative effects on valuation of money--which as a whole appears to be a relatively unimportant variable--the effects of education are positive. It is in most cases the education level that matters. Quite reasonably, however, positive effects are ascribed to business education with respect to perceived know-how and societal contribution.
- No effect of immigrant status on expected payoff emerges. This suggests that on the basis of these data alone it cannot be concluded that an overrepresentation of immigrants among business founders is attributable to discrimination in other parts of the work market.

Table 7 Multiple regression models for attitudes

Variable group	Change	Competitiveness	Money	Achievement	Autonomy	Payoff	Societal contribution	Know-how
Variable	<i>Unst. coeff.</i>	<i>Unst. coeff.</i>	<i>Unst. coeff.</i>	<i>Unst. coeff.</i>	<i>Unst. coeff.</i>	<i>Unst. coeff.</i>	<i>Unst. coeff.</i>	<i>Unst. coeff.</i>
<i>Gender</i>								
Male	-	.87****	.72****	.55****	-	1.13****	.34**	.39****
<i>Vicarious experience</i>								
Small firm work exp.	-	-	-	-	-	-	-	.24*
Father	-	-	-	.45**	-	-.53*	.54***	-
Spouse	-	-	-	-	-.57**	-1.38****	.50**	.35*
Lacks model	-.28*	-.46*	-	-	-.35**	-	-.29*	-.40***
Model perc.	.22**	.57****	.17*	.45****	-	.38**	.38****	.28****
<i>Education</i>								
Level	.27****	.13*	-.42****	.23****	.22****	.44****	.22****	-
Business	-	-	-.60*	-	-	-	.51*	.61**
<i>Radical change</i>								
Immigrant Mover	- .69****	1.48**** -	.78** -.22**	- .28**	- .31***	- -	-1.01**** .29***	- .21**
(Constant)	7.61****	9.32****	7.81****	7.63****	9.32****	16.27****	9.08****	2.74****
R ²	.11	.08	.11	.08	.05	.08	.12	.07

Note: p<.05 = *; p<.01 = **; p<.001 = ***; p<.0001 = ****.

- For some of the established relationships the interpretation is uncertain. For example, immigrants' higher scores on competitiveness and valuation of money are in line with Lynn's (1991) and Hofstede's (1980) results on Swedish culture, but they can hardly be regarded as consequences of these individuals' experience with radical change (rather to their growing up in a different culture than the Swedish). It can also be debated whether a positive role model influences an individual's general attitudes or if causality runs the other direction. i.e., individuals with certain general attitudes make more positive evaluations of entrepreneurial role models. Hence, interpretations should be cautious.

All in all, the results lend considerable support to the notion that many of the relationships between personal background factors and entrepreneurial behavior that have been established in previous research, and in the bivariate results presented above, are mediated by differences in entrepreneurship-relevant attitudes.

6. Conclusion

The research presented here neatly summarizes and corroborates many previous findings in entrepreneurship research. Hopefully, the integration of the empirical relationships into a model has added some meaningfulness. The proposed model receives support in terms of reasonably high explanatory power with respect to the central variables. Further, some direct or indirect influence on entrepreneurial intentions is ascribed to all variable groups that were included in the model. The strongest and most direct influence is ascribed to the conviction variable, while the weakest and most indirect influence emerges for education and experience with radical change. The effects of current employment status turned out to be relatively weak, but it could be demonstrated that this factor is likely to be a more important factor for the actual start-up decision.

The results concerning general attitudes suggest that there is still some room for trait-like psychological explanations if other contingencies are also considered. General attitudes related to achievement, change-orientation, competitiveness and autonomy seem to make individuals more convinced that running one's own firm is a desirable alternative. However, it is important to stress that such psychological characteristics are neither necessary nor sufficient prerequisites for an entrepreneurial career choice. Neither are they just inborn qualities that are totally separated from personal background influences on entrepreneurial intentions. Instead both general and domain attitudes act as mediators for the influence of personal background, although the analyses suggest that gender and vicarious experience also have direct effects on entrepreneurial conviction.

While the primary purpose of this research was to add meaningfulness by integrating and corroborating previous findings it also introduces some novelty. An example of this is the inclusion of the competitiveness dimension. To the knowledge of this author it has not been used before in a similar study. It was here demonstrated to have an influence of the same magnitude as the much discussed achievement and autonomy dimensions. However, more domain-specific and presumably easier-to-change attitudes have at least an equally strong impact. For policy-makers the relatively strong effect of know-how is worth consideration. Just providing counseling services is not enough, they should also be well advertised. Another interesting finding concerning domain attitudes is that perceptions concerning workload, risk, and financial gain are highly inter-correlated and can be combined to a

holistic perceived payoff dimension. In comparison to other groups those with very close role models have less positive beliefs concerning payoff. Maybe this result, too, is worth consideration for policy-makers.

The study also adds to our still very provisional understanding of how the presence and, in particular, perception of role models affect entrepreneurial intentions. The same is true for the reasons behind the skewed gender distribution among business founders. It could be demonstrated that the determinants of entrepreneurial intentions are not markedly different between the sexes and that gender has little or no direct influence on entrepreneurial intentions. The observed underrepresentation of females among business founders seems to have at least two reasons. Firstly, attitudes or values favoring competitiveness and (individual) achievement positively affect entrepreneurial intentions. Such attitudes are in these data more characteristic for males than for females, and this seems to be a universal phenomenon; cf. Lynn (1991) and Hofstede (1980). This is also probably the reason why females on average value the payoff (workload-risk-gain) of an entrepreneurial career less favorably. While the similarity between the explanatory models for men and women give some support to the notion that it is females who hold relatively more "male" attitudes who are attracted to entrepreneurship, it must be stressed that the gender differences in attitudes as well as in intentions are group average differences of moderate magnitude. Individuals of both sexes are well represented all over the continua.

Secondly, and more importantly, it appears that females are underrepresented among business founders because of lack of vicarious experience. Relatively less often than men are women brought up by or work close to entrepreneurial role models of the same sex. This leads to less perceived know-how and a direct gender effect on the conviction that founding a firm is a suitable alternative. Hence, there is a vicious circle where underrepresentation of female business owner-managers leads to underrepresentation of female business founders. To break this pattern is no easy task and is likely to take considerable time. Part of the solution would be informational or educational measures aimed at increasing perceptions of entrepreneurial know-how among women. Another part may be to make positive female role models more visible. In particular, role models who can signal that entrepreneurship is compatible with values and attitudes that are more appealing to females may nourish the emergence of a more distinctly female breed of entrepreneurship.

The analyses have shown that vicarious experience has important effects on entrepreneurial intentions, whereas business education had some effect on perceived know-how but little more than that. This supports the notion that for the most part business education produces large-firm employees with a trustee-orientation, but it also advises a way out of this state of affairs. If business education is to provide a platform for future entrepreneurial initiatives, then the entrepreneurial perspective should be brought up consistently in all courses and not only in a few electives. When taking basic courses in finance, marketing and organization theory, why should not the students repeatedly encounter the young, small, or even not-yet-existing firm's perspective in the readings, the cases and through guest appearances by practicing entrepreneurs? This would affect entrepreneurial intentions much in the same manner as role models or working for a small firm positively affect intentions and their psychological antecedents. The challenge for business schools is to create this inspirational effect and make it interact with the confidence building that substantive knowledge provides.

A strength of this study is that the relationships could be tested on six separate samples. By and large, the results turned out to be reasonably stable. However, a close examination of the

variations across sub-samples can serve as a methodological lesson. Both those who believe in far-reaching interpretations of relative importance of explanatory variables based on relatively small samples, and those who interpret lack of statistical significance as evidence for lack of effect, should find cause for concern; cf. Oakes (1986). Social reality is complex. Therefore, empirical results from single studies give little basis for firm conclusions, and therefore we need large studies and replications as well as and theoretical integration and interpretation. That is what this paper has aimed to provide.

References

- Aiginger, K & G. Tichy (1991). Small Firms and the Merger Mania, *Small Business Economics*, 3, 83-102.
- Ajzen, I. (1991). The Theory of Planned Behavior, *Organizational Behavior and Human Decision Processes*, 50, 179-211.
- Ajzen, I. & M. Fishbein (1980). *Understanding Attitudes and Predicting Social Behavior*. Englewood Cliffs, NJ.: Prentice-Hall.
- Aldrich, H & G. Wiedenmayer (1993). From Traits to Rates: an Ecological Perspective on Organizational Foundings, *Advances in Entrepreneurship, Firm Emergence, and Growth*, 1, 145-196.
- Aronsson, M. (1991) *Nyföretagandet i Sverige* [New Firm Formation in Sweden]. Stockholm: Statens Industriverk (SIND 1991:6).
- Bamberger, I. (1986). "The Stratos Project: Theoretical Bases and Some First Descriptive Results", paper presented at the 4th Nordic Research Conference on Small Business, Umeå/Vasa, June 4-6.
- Bandura, A.(1986). *The Social Foundations of Thought and Action*. Englewood Cliffs, NJ.: Prentice-Hall.
- Bird, B. (1988). Implementing Entrepreneurial Ideas: The Case for Intention, *Academy of Management Review*, 13, 442-453.
- Bird, B. (1993). Demographic Approaches to Entrepreneurship: the Role of Experience and Background, *Advances in Entrepreneurship, Firm Emergence, and Growth*, 1, 11-48.
- Boyd, N.G. & G.S. Vozikis (1994). The Influence of Self-Efficacy on the Development of Entrepreneurial Intentions and Actions, *Entrepreneurship Theory & Practice*, Summer, 63-77.
- Brockhaus, R.H. Sr. (1982). The Psychology of Entrepreneurship. In: C.A. Kent, D.L. Sexton & K.H. Vesper (eds.) *The Encyclopedia of Entrepreneurship*, Englewood Cliffs, NJ.: Prentice-Hall.
- Brockhaus R.H. Sr. & P.S. Horwitz (1986). The Psychology of Entrepreneurship. In: D.L. Sexton & R.W. Smilor (eds.) *The Art and Science of Entrepreneurship*, Cambridge, MA.: Ballinger.
- Campbell, C.A. (1992). A Decision Theory Model for Entrepreneurial Acts, *Entrepreneurship Theory & Practice*, Fall, 21-27.
- Cromie, S. (1988). Motivations of Aspiring Male and Female Entrepreneurs, *Journal of Occupational Behaviour*, 4, 251-261.
- Davidsson, P. (1989). *Continued Entrepreneurship and Small Firm Growth*. Stockholm: The Economic Research Institute (diss.).
- Davidsson, P. (1991) Continued Entrepreneurship: Ability, Need and Opportunity as Determinants of Small Firm Growth, *Journal of Business Venturing*, 6, 405-429.
- Davidsson, P. (1992). Entrepreneurship and Small Business Research: How Do We Get Further? *BA-Publications No. 126*. Umeå: Umeå Business School.
- Davidsson, P. (1995a). "Small Firms: Has Their Role as Job Creators Been Exaggerated?" Paper presented at the 40th ICSB World Conference, Sydney, June 18-21.
- Davidsson, P., (1995b). *SMEs and Job Creation in Sweden*. Report submitted to the OECD.
- Davidsson, P. (1995c). Culture, Structure and Regional Levels of Entrepreneurship, *Entrepreneurship and Regional Development*, 7, 41-62.
- Davidsson, P. (1995d). Kultur och Entreprenörskap - en uppföljning [Culture and Entrepreneurship: a Follow-up]. Örebro: The Swedish Foundation for Small Business Research.

- Davidsson, P., L. Lindmark & C. Olofsson (1994). New Firm Formation and Regional Development in Sweden, *Regional Studies*, 28, 395-410.
- Davidsson, P., L. Lindmark & C. Olofsson (1995). "The Trend towards Smaller Scale during the 1980s: Empirical Evidence from Sweden", paper presented at the *40th ICSB World Conference*, Sydney, June 18-21.
- Davidsson P. & J. Wiklund (1995). "Cultural Values and Regional Variations in New Firm Formation", paper presented at the *15th Babson College Entrepreneurship Research Conference*, London, April 13-15.
- de Wit, G. & F.A.A.M. van Winden (1989). An Empirical Analysis of Self-employment in the Netherlands, *Small Business Economics*, 1, 263-272.
- Ekehammar, B. & P. Niemenmaa (1992). "Attitudes towards Work and Money: Analyses of Various Scales Applied to a Swedish Sample" (mimeo).
- Gartner, W.B. (1988). "Who is an Entrepreneur" Is the Wrong Question, *American Small Business Journal*, Spring, 11-31.
- Gartner, W.B. (1989). Some Suggestions for Research on Entrepreneurial Traits and Characteristics, *Entrepreneurship Theory & Practice*, Fall, 27-37.
- Hagen, E. (1962). *On the Theory of Social Change: How Economic Growth Begins*. Homewood, Ill: Dorsey Press.
- Hamilton, R.T. (1988). Motivations and Aspirations of Business Founders, *International Small Business Journal*, 6, 70-78.
- Hamilton, R.T. (1989). Unemployment and Business Formation Rates: Reconciling Time-series and Cross-section Evidence, *Environmental Planning A*, 21, 249-255.
- Hofstede, G. (1980). *Culture's Consequences: International Differences in Work-related Values*, Beverly Hills, CA.: Sage Publications.
- Hornaday, J.A. (1982). Research about Living Entrepreneurs. In: C.A. Kent, D.L. Sexton & K.H. Vesper (eds.) *The Encyclopedia of Entrepreneurship*, Englewood Cliffs, NJ.: Prentice-Hall.
- Johnson, B.R. (1990). Toward a Multidimensional Model of Entrepreneurship: The Case of Achievement Motivation and the Entrepreneur, *Entrepreneurship Theory & Practice*, Fall, 39-54.
- Katz, J. (1992). A Psychological Cognitive Model of Employment Status Choice, *Entrepreneurship Theory & Practice*, Fall, 29-37.
- Krueger, N. (1993). The Impact of Prior Entrepreneurial Exposure on Perceptions of New Venture Feasibility and Desirability, *Entrepreneurship Theory & Practice*, Fall, 5-21.
- Krueger, N. (1994). "Strategic Optimism: Antecedents of Perceived Probabilities of New Venture Success", paper presented at the *Academy of Management meeting, BPS Division*.
- Krueger, N. & D.V. Brazael (1994). Entrepreneurial Potential and Potential Entrepreneurs, *Entrepreneurship Theory & Practice*, Spring, 91-104.
- Krueger, N. & A. Carsrud (1993). Entrepreneurial Intentions: Applying the Theory of Planned Behavior, *Entrepreneurship & Regional Development*, 5, 315-330.
- Low, M. & I.C. MacMillan (1988). Entrepreneurship: Past Research and Future Challenges, *Journal of Management*, 14, 139-151.
- Lynn, R. (1991). *The Secret of the Miracle Economy: Different National Attitudes to Competitiveness and Money*. London: The Social Affairs Unit.
- Matthews, H. & S. Moser (1995). The Impact of Family Background and Gender on Interest in Small Firm Ownership: a Longitudinal Study. Paper presented at *ICSB 40th World Conference*, Sydney, June 19-21.
- McClelland, D.C. (1961). *The Achieving Society*. Princeton, NJ.: Van Nostrand.

- McGrath, R.G., I.C. MacMillan, E. Ai-Yuan Yang & W. Tsai (1992). Does Culture Endure, Or Is It Malleable? Issues for Entrepreneurial Economic Development, *Journal of Business Venturing*, 7, 441-458.
- Martin, M.J. (1984). *Managing Technological Innovation and Entrepreneurship*. Reston, VA.: Reston Publishing.
- Naffziger, D.W., J.S. Hornsby & D.F. Kuratko (1994). A Proposed Research Model of Entrepreneurial Motivation, *Entrepreneurship Theory & Practice*, Spring, 29-42.
- Oakes, M. (1986). *Statistical Inference: A Commentary for the Social and Behavioural Sciences*. Chichester: Wiley.
- Reynolds, P.D. (1991). Sociology and Entrepreneurship: Concepts and Contributions, *Entrepreneurship Theory & Practice*, Winter, 47-70.
- Reynolds, P.D. (1995). "Who Starts New Firms? Linear Additive versus Interaction Based Models", paper presented at the *15th Babson College Entrepreneurship Research Conference*, London, April 13-15.
- Reynolds, P.D. & B. Miller (1990). "Race, Gender, and Entrepreneurship: Participation in New Firm Start-ups", paper presented at the *American Sociological Association Annual Meeting*, Washington D.C.
- Reynolds, P.D., D.J. Storey & P. Westhead (1994) Cross-national Comparisons of the Variation in New Firm Formation Rates, *Regional Studies*, 28, 443-456.
- Rogers, E.M.(1983). *Diffusion of Innovations*, 3rd ed. New York: The Free Press.
- Ronen, J. (1983). Some Insights into the Entrepreneurial Process. In: J. Ronen (ed.) *Entrepreneurship*. Lexington: Lexington Books.
- Rotter, J.B. (1966). Genralized Expectancies for Internal versus External Control of Reinforcement, *Psychological Monographs: General and Applied*, 80, 609.
- SCB (1994). Nyföretagandet i Sverige 1992 och 1993 [New Firm Formation in Sweden 1992 and 1993]. *Statistiska meddelanden F15 SM 9401*. Örebro: SCB Publishing Unit.
- Scheinberg, S. & I.C. MacMillan (1988). An 11 Country Study of Motivations to Start a Business, *Frontiers of Entrepreneurship Research 1988*. Wellesley, MA.: Babson College.
- Scherer, R.F., J.S. Adams, S.S. Carley & F.A. Wiebe (1989). Role Model Performance Effects on Development of Entrepreneurial Career Preference, *Entrepreneurship Theory & Practice*, Spring, 53-71.
- Scherer, R.F., J.D. Brodzinsky & F.A. Wiebe (1990). Entrepreneur Career Selection and Gender: A Socialization Approach, *Journal of Small Business Management*, 28, 37-45.
- Scherer, R.F., J.D. Brodzinsky & F.A. Wiebe (1991). Examining the Relationship between Personality and Entrepreneurial Career Preference, *Entrepreneurship & Regional Development*, 3, 195-206.
- Scott, M.G. & D.F. Twomey (1988). The long-term Supply of Entrepreneurs: Students' Career Aspirations in Relation to Entrepreneurship, *Journal of Small Business Management*, 26, 35-13.
- Shapero, A. & L. Sokol (1982). The social Dimension of Entrepreneurship. In: C.A. Kent, D.L. Sexton & K.H. Vesper (eds.) *The Encyclopedia of Entrepreneurship*, Englewood Cliffs, NJ.: Prentice-Hall.
- Shaver, K.G. & L.R. Scott (1991). Person, Process, Choice: The Psychology of New Venture Creation, *Entrepreneurship Theory & Practice*, Winter, 23-45.
- Sheppard, B., J. Hartwick & P. Warshaw (1988). The Theory of Reasoned Action: A Meta-analysis of Past Research with Recommendations and Future Research, *Journal of Consumer Research*, 15, 325-344.
- Stanworth, M.J. and J. Curran (1973). *Management Motivation in the Smaller Business*.

- Epping, Essex: Gower Press.
- Stanworth, J., S. Blythe, B. Granger & C. Stanworth (1989). Who Becomes an Entrepreneur? *International Small Business Journal*, 8, 11-22.
- Storey, D.J. (1994). *Understanding the Small Business Sector*. London: Routledge.
- Vroom, V.H. (1964). *Work and Motivation*. New York: John Wiley.
- Wärneryd, K-E. (1988). The Psychology of Innovative Entrepreneurship. In: W.F. van Raaij, G.M. van Veldhoven & K-E. Wärneryd (eds.) *Handbook of Economic Psychology*. Dordrecht: Kluwer.
- Wärneryd, K-E., P. Davidsson & R. Wahlund (1987). Some Characteristics of the Swedish Self-employed. *Research Paper*. Stockholm: the Economic Research Institute.

APPENDIX

Table A1 All variables intentions model tested on separate sub-samples (standardised regression coefficients)

Variable	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	All Males	All Females
Conviction	.49****	.56****	.54****	.51****	.46****	.53****	.50****	.52****
Temporary	.14**	.05	.10*	-.00	.11*	.07	.08**	.08**
Unemployed	.03	-.01	.03	.01	.03	.09	.06*	.02
Change	.15**	.08	.01	.06	.09	-.00	.05	.09**
Achievement	.07	.04	.12*	.10	-.02	.05	.06*	.06
Societal contribution	.17**	.06	.10*	-.00	.08	.12*	.14****	.05
Know-how	.06	.14**	.04	.04	.20**	.05	.05	.11***
Male	.06	.13**	.14**	-.00	.04	-.01	-	-
Small firm work exp.	-.01	.11	.00	.15**	.04	.07	.05	.08**
Lacks model	-.08	-.04	-.09	-.08	-.16***	-.17**	-.13****	-.11***
Model perception	.11*	.04	-.02	.09	-.02	.11*	.07*	.05
R ²	.53	.58	.50	.46	.53	.46	.47	.49
n	189	170	183	177	170	169	485	564

Table A2 All variables conviction model tested on separate sub-samples (standardized regression coefficients)

Variable	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6	All Males	All Females
Permanent	-.09	-.08	-.17**	-.15**	-.21***	-.15**	-.15****	-.17****
Change	.17**	.14**	.18**	.15**	.11*	.11	.22****	.08*
Competitiveness	.19**	.05	.04	.20**	.08	.07	.09*	.11**
Achievement	.06	.20**	.05	.08	.10	.06	.04	.13**
Autonomy	.23***	.05	.02	.12*	.22***	.19**	.16****	.13***
Payoff	.18**	.01	.19**	.20***	.07	.12*	.07*	.17****
Know-how	.20***	.34****	.22***	.18**	.26****	.23***	.20****	.26****
Male	.20***	.05	.22***	.07	.26****	.21***	-	-
Small firm work exp.	.01	.17*	.06	.09	.11*	.07	.12**	.05
Lacks model	-.07	-.01	-.09	-.11*	-.15**	-.01	-.06	-.08**
Model perception	.03	.08	.18**	.13*	.13*	.19**	.13***	.12***
R ²	.42	.31	.34	.42	.49	.39	.33	.38
n	191	170	183	177	172	169	497	565

Note: In the analyses in tables A1 and A2 all variables included in the "all variables" version of the combined sample model for explaining intentions and conviction, respectively, were included in each separate analysis, employing the "Enter" command in the SPSS Regression routine. $p < .05 = *$; $p < .01 = **$; $p < .001 = ***$; $p < .0001 = ****$.

Table A3 Items used in conviction and attitude indices

<p><i>Conviction</i> ($\alpha=.77$)</p> <ol style="list-style-type: none"> 1. Even if I came up with a good business concept I do not think I would dare to take the risk of founding my own firm * 2. I do not think I have the qualities needed for running one's own business * 3. I would be very happy running my own firm 4. To run my own firm would probably be the best way for me to support myself where I currently live 5. To run my own firm would probably be the best way for me to improve my financial position
<p><i>Change</i> ($\alpha=.60$)</p> <ol style="list-style-type: none"> 1. In order to really feel satisfied with life I need some dramatic change now and then 2. Dramatic changes in one's life situation are for the most part an enrichment in the long run 3. I want things to stay the way I'm used to (rev) 4. I'd rather live in the same place all life (rev)
<p><i>Competitiveness</i> ($\alpha=.76$)</p> <ol style="list-style-type: none"> 1. I enjoy working in situations involving competition with others 2. It is important for me to perform better than others on a task 3. I feel that winning is important in both work and game 4. It annoys me when other people perform better than I do 5. I try harder when I'm in competition with others
<p><i>Valuation of Money</i> ($\alpha=.70$)</p> <ol style="list-style-type: none"> 1. I firmly believe money can solve all my problems 2. I feel that money is the only thing I can really count on 3. I would do practically anything legal for money if it were enough 4. I am proud of my financial victories, pay, riches, investments, etc.--and let my friends know about them 5. Compared to most other people I know, I think about money much more than they do
<p><i>Achievement motivation</i> ($\alpha=.60$)</p> <ol style="list-style-type: none"> 1. I find it hard to understand people who always keep on striving towards new goals although they have already achieved all the success they could possibly have imagined (rev) 2. To face new challenges and to manage to cope with them is extremely important to me 3. I always try to succeed and accomplish something more than the average 4. I'm probably a bit pushing and try to improve all the time
<p><i>Autonomy</i> ($\alpha=.60$)</p> <ol style="list-style-type: none"> 1. When I am in a group I am happy to let someone else take the lead (rev) 2. I think I've found it harder than others to let authorities like parents, teachers, and superiors control me 3. I usually do what is expected of me and follow instructions (rev) 4. I usually trust my own judgement and do not care much about what others say or think
<p><i>Payoff</i> ($\alpha=.73$)</p> <ol style="list-style-type: none"> 1. Most business owner-managers are well off 2. Founding a firm is very risky (rev) 3. As a business owner-manager you can almost never take a day off (rev) 4. For your personal financial position running your own firm is no great advantage (rev) 5. It is very difficult to run one's own firm (rev) 6. In order to make it as a business owner-manager you'd have to work much harder than others do (rev) 7. S/he who starts his own business runs a great risk of losing all s/he has (rev) 8. Considering the work effort most business owner-managers are actually underpaid (rev) 9. In order to become successful running your own business you would have to be very knowledgeable in many different areas (rev)
<p><i>Societal contribution</i> ($\alpha=.52$)</p> <ol style="list-style-type: none"> 1. Entrepreneurs create employment and are therefore very important for the nation's economy 2. Most entrepreneurs are only interested in making as much money as possible for themselves (rev) 3. Individuals who founded firms created our national wealth 4. On balance, small firms are rather a loss to society, since quite a few entrepreneurs engage in tax fraud or cause costly bankruptcies (rev)
<p><i>Knowhow</i> ($\alpha=.77$)</p> <ol style="list-style-type: none"> 1. If I came up with a good business concept I know precisely how to get the funds needed to get started 2. If I came up with a good business concept I know precisely where to turn for the counselling and aid I might need to get started.

